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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,466	03/30/2004	Sanjeev M. Naik	GP-303149	3142
7590	09/20/2005		EXAMINER	
KATHRYN A MARRA General Motors Corporation Legal Staff, Mail Code 482-C23-B21 P.O. Box 300 Detroit, MI 48265-3000			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	
DATE MAILED: 09/20/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/812,466	NAIK, SANJEEV M.	
	Examiner Tu M. Nguyen	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 March 2004 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

<ol style="list-style-type: none"> <li>1)<input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3)<input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>033004</u>.</li> </ol>	<ol style="list-style-type: none"> <li>4)<input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.</li> <li>5)<input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6)<input type="checkbox"/> Other: _____.</li> </ol>
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## **DETAILED ACTION**

### *Specification*

1. The disclosure is objected to because of the following informalities:
  - Pages 3-4, the serial numbers for the co-pending applications should be included on lines 2 and 8 of paragraph 0008.
  - Pages 11-12, the serial numbers for the co-pending applications should be included on line 7 of paragraph 0036, line 3 of paragraph 0040, and lines 12-13 of paragraph 00041.Appropriate correction is required.

### *Claim Objections*

2. Claims 9-10 are objected to because of the following informalities:
  - Claim 9, line 4 of the claim, “forending” should read --for ending--.
  - Claim 10, last line of the claim, “..” should read ---.Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Sun et al. (U.S. Patent 6,253,546).

Re claims 1, 6, and 10, as shown in Figures 1-4, Sun et al. disclose a method, a system, and an article of manufacture (15) comprising a storage medium (84) having a computer program encoded therein for controlling a direct-injection gasoline engine (10) during regeneration of a lean NOx trap (53) disposed in an exhaust path of the engine, the regeneration characterized by a transition from stratified lean engine operation to homogeneous rich engine operation, comprising:

- determining a base desired torque (brake torque) (lines 7-24 of column 4);
- estimating a decrease in engine torque that would result from transitioning from stratified lean engine operation to homogeneous rich engine operation during a lean NOx trap regeneration (during the regeneration, a reduction of intake manifold pressure is computed in expression (2); this reduction causes a decrease in engine torque (also see lines 25-43 of column 4)); and
- applying a compensating control torque (fueling rate or spark timing adjustment) to the engine in an amount sufficient to compensate for the estimated decrease in engine torque thereby maintaining the base desired torque level during the lean NOx trap regeneration (see line 43 of column 4 to line 19 of column 5).

Re claims 2, 7, and 11, in the method, system, and article of manufacture of Sun et al., estimating a decrease in engine torque comprises (see lines 28-43 of column 4):

- determining a desired mass of air charge (lines 33-34 of column 4) and exhaust gas recirculation (lines 36-38 of column 4) for a lean NOx trap regeneration;

- determining a reference value ( $P_m$ ) for manifold absolute pressure for the lean NOx trap regeneration; and

- determining a compensating torque feed-forward value (see expression (3)) sufficient to maintain the base desired torque level during lean NOx trap regeneration from the determined desired mass of air charge and exhaust gas recirculation and the determined reference value for manifold absolute pressure.

Re claims 3, 8, and 12, in the method, system, and article of manufacture of Sun et al., applying a compensating control torque to the engine comprises increasing fueling to the engine in an amount sufficient to effect said compensating control torque (see Figure 4D, lines 27-30 of column 5, and lines 12-19 of column 5).

Re claim 4, in the method of Sun et al., determining a base desired torque is accomplished in accordance with one or more of a throttle pedal position, a cruise control setting and an idle speed control (lines 9-24 of column 4).

Re claims 5, 9, and 13, the method and article of manufacture of Sun et al. further comprising (see Figure 2 and lines 37-42 and 48-50 of column 3):

- determining the end of the lean NOx trap regeneration event; and  
- ending the step of applying a compensating control torque at the end of the lean NOx trap regeneration.

*Prior Art*

5. The IDS (PTO-1449) filed on March 30, 2004 has been considered. An initialized copy is attached hereto.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents: Sun et al. (U.S. Patent 6,079,204), Murata et al. (U.S. Patent 6,109,025), Mizuno (U.S. Patent 6,237,329), Brehob et al. (U.S. Patent 6,244,047), and Litorell et al. (U.S. Patent 6,609,364) further disclose a state of the art.

*Communication*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Tu M. Nguyen*

TMN  
September 19, 2005

Tu M. Nguyen  
Primary Examiner  
Art Unit 3748